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GARDEN FERTILIZERS

U.S. Dept. of Agriculture

A radio discussion by Dr. C. C. Fletcher of the Soil Fertility Division of the Bureau of Chemistry and Soils, and W. R. Beattie of the Bureau of Plant Industry, on the National Farm and Home Hour program, Tuesday, February, 9, 1932.

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ANNOUNCER:

Keeping the soil fertile is one of the big problems of truck farmers and gardeners. Mr. W. R. Beattie, our Garden Calendar Specialist, has brought Dr. C. C. Fletcher of the Soil Fertility Section of the Bureau of Chemistry and Soils here today to give you gardeners a few suggestions about the best methods of keeping up the fertility of your gardens and truck farms. All right, Mr. Beattie.

MR. BEATTIE:

Hello Folks: No doubt many of you know Dr. Fletcher or have heard about his work in the Bureau of Chemistry and Soils. Now, Dr. Fletcher, you are just the man we have been looking for to answer some of the questions that the Farm and Home Hour folks have been asking us. Here is a typical question. "Tell me the best way to improve the soil of my garden?"

DR. FLETCHER:

One of the best methods would be to give it a good coating of manure.

MR. BEATTIE:

Yes, I know that would be one of the very best ways, Dr. Fletcher, but I've tried everywhere to get a supply of manure, but I could only get enough for making a small hotbed. What can I use on my land in place of manure?

DR. FLETCHER:

Well, one good substitute for manure is to grow soil-improving crops on your land and turn them under, then supplement with commercial fertilizers.

MR. BEATTIE:

But, Dr. Fletcher, I cannot grow soil-improving crops on my land, because I need the space for growing vegetables.

DR. FLETCHER:

Quite true, but you can grow soil-improving crops on your land late in the season after the money crops come off, or you can often sow rye or some other soil-improving crop before such crops as late corn, tomatoes or cabbage come off and so have a winter cover crop.

MR. BEATTIE:

I can see how that is possible another year, but what am I to do this year? My land is in fair condition, but it needs something in it if I am to make big crops.

(Over)

DR. FLETCHER:

In that case you will have to depend mainly on chemical fertilizers for this season then start your regular soil improvement program during the summer or early fall.

MR. BEATTIE:

All right Dr. Fletcher. Now let me state a typical problem a little more fully. Let us say that I have a tract of rather level bottom land on which I grew beans, sweet corn, tomatoes, and a general line of vegetables last season. Late in the fall, I sowed rye which has made a fair growth. What would you advise me to do in order to get the land in shape for planting early vegetables this spring?

DR. FLETCHER:

Well, to begin with, I would allow the rye to remain as long as possible, provided it is still green. I would plow the rye under three or four weeks before you want to plant your vegetable seeds. As young rye decays quickly that will give it time to begin to decay before your vegetable plants get started.

MR. BEATTIE:

How about commercial fertilizers? How much should I use?

DR. FLETCHER:

That will depend upon the crop you plant. Under the conditions you have mentioned, one thousand pounds of a high grade complete fertilizer might be enough for a crop of snap beans. Eight hundred pounds might be enough for tomatoes, but you might need twelve to sixteen hundred pounds to the acre for cabbage and in some sections a ton will pay on potatoes. It all depends on the crop and the general condition of your land.

MR. BEATTIE:

What do you mean by the general condition of the land?

DR. FLETCHER:

I mean the amount of organic matter or humus in the soil, how long since the land was well manured, kind of crops grown on it the past few years, whether or not the land needs drainage or liming, what is the character of the soil and subsoil.

MR. BEATTIE:

Seems to me that's a whole lot to find out. How am I to tell?

DR. FLETCHER:

By its crop production record, or perhaps your county agricultural agent can help you.

MR. BEATTIE:

But I didn't keep production records.

DR. FLETCHER:

Well, you certainly know in a general way what kind of crops your garden land produced the past few years. I would advise you to keep records in the future.

MR. BEATTIE:

I certainly shall. Now Dr. Fletcher tell me about the kinds and amounts of commercial fertilizers to use in order to get the largest crops at the lowest cost per bushel or pound or whatever the unit may be. For instance, can I make a basic or general application of fertilizers over the whole tract, then supplement this with special applications wherever I plant crops that need additional fertilizing?

DR. FLETCHER:

Yes, after plowing you can broadcast say about 1,000 pounds of a 4-12-4 or a 5-10-5 fertilizer per acre and harrow it into the soil. For early crops you can use a mixture somewhat higher in nitrogen such as a 7-6-5. In some sections gardeners use a ton of fertilizer per acre for the initial application. That is usually sufficient to grow most crops but top-dressings and supplemental applications are often advantageously used for special crops.

MR. BEATTIE:

What do you mean by a 4-12-4 and a 5-10-5 fertilizer, Dr. Fletcher?

DR. FLETCHER:

The first figure stands for nitrogen, the second for phosphoric acid and the third for potash. For example, a 5-10-5 fertilizer would contain 5 per cent of nitrogen, 10 per cent of phosphoric acid, and 5 per cent of potash. Expressing it another way, each 100 pounds of the fertilizer would contain 5 pounds of nitrogen, 10 pounds of phosphoric acid, and 5 pounds of potash.

MR. BEATTIE:

Is that system of expressing the percentages of the different elements in fertilizers universal throughout the country, Dr. Fletcher?

DR. FLETCHER:

We are rapidly adopting that system, but up to a couple of years ago fertilizer manufacturers in the South placed the phosphoric acid first so instead of the formula being 5-10-5 they expressed it as 10-5-5.

MR. BEATTIE:

you mention phosphoric acid as one of the elements of fertilizers. Are phosphoric acid and superphosphate one and the same?

DR. FLETCHER:

No indeed. Superphosphate is the treated phosphate rock, formerly called acid phosphate. It has no acid affect on the soil and so we dropped the old and misleading name and we now call it superphosphate. It contains varying amounts of available phosphoric acid, usually from 16 to 20 per cent, and is our main source of phosphoric acid in fertilizers.

MR. BEATTIE:

Does the form in which the various elements exist in fertilizers make any great difference?

(Over)

DR. FLETCHER:

Yes considerable, especially as regards the time required for these elements to become available. Take nitrate of soda as an example, the nitrogen that it contains becomes available for the use of plants almost as soon as it is dissolved in the soil. The phosphoric acid in raw phosphate rock is very slowly available while that of the treated rock is available in a much shorter period.

MR. BEATTIE:

A little while ago you mentioned lime. Is lime needed on our garden soils as a rule, Dr. Fletcher?

DR. FLETCHER:

Lime is sometimes needed on garden soils but not always, in fact, some soils already have too much lime in them. Then the lime requirement of the various vegetables differs. Potatoes are liable to be injured by the scab disease if the land is too heavily limed, or if an excess of lime is found naturally in the soil. On the other hand beets want a reasonable amount of lime in the soil on which they are grown. Lime is used to correct acidity in our soils and most of our garden vegetables do best on soils that are just about neutral or perhaps a trifle on the acid side.

MR. BEATTIE:

But suppose you had a test made by your County Agricultural Agent or by your State Experiment Station and the test showed that your soil was acid and needed lime, what form of lime would you recommend?

DR. FLETCHER:

The form really isn't so important as the right amount. If given my choice I would take the finely ground raw limestone. Hydrated lime and fresh burned lime are all right but you have to be a little more careful in using them.

MR. BEATTIE:

Suppose you had your soil tested and the test indicated that you should apply about 1,000 pounds of hydrated lime to the acre, what would be its equivalent in ground limestone?

DR. FLETCHER:

About 1,350 pounds.

MR. BEATTIE:

And in fresh burned lime?

DR. FLETCHER:

About 750 pounds.

MR. BEATTIE:

How would you apply lime?

DR. FLETCHER:

It is best applied by thoroughly mixing it with the top soil well in advance of planting. The burned lime and hydrated lime become carbonated in the soil and are then as safe as ground limestone. There may be danger of injuring the plants from the use of fresh lime and to a lesser degree from hydrated lime where they are not applied well in advance of planting. There is practically no danger from the ground limestone if used in nornal quantities. Ground limestone is difficult to procure in small quantities while the hydrated lime is easy to get in 50-pound paper bags.

MR. BEATTIE:

One more question Dr. Fletcher, will it pay the average gardener to make a compost heap?

DR. FLETCHER:

Yes where the gardener has the labor to spare it will pay him to make a compost heap. Use sods, leaves, manure, cleanings from the poultry house, in fact, anything you can get of an organic nature, then add a little superphosphate and wet down the heap so that it will rot. You can use the compost to advantage in your melon and cucumber hills and a shovelful under a tomato or eggplant will sometimes double the yield of fruit.

MR. BEATTIE:

Thank you Dr. Fletcher. Some other time I want to ask you about using nitrate of soda and other fertilizers as side dressings along the rows of growing vegetable crops.